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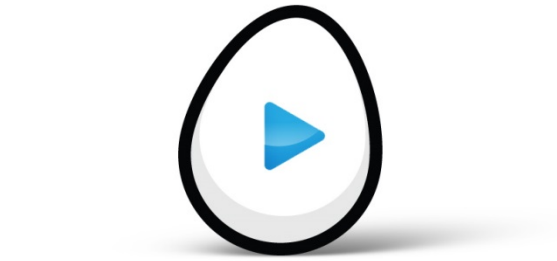

Six questions that parents ask about children's use of digital media: A review

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Introduction: the 'big six'

Most people would agree that, whether for play, learning, or communication, children's experiences with digital media will have significant implications for their future lives and that there are uncertainties about what this means in the long term. In our responses to the 'big six' questions we use the term 'children' to encompass preschoolers through to the early teenage years. We make quite a lot of use of material produced by Ofcom and that tends to relate to two categories: children who are three and four and those who are between five and fifteen years old. Parents will have different concerns depending on the age range and, of course, children's use of digital media varies a lot depending on how old they are, whether they have older brothers and sisters, and their parents' attitudes.

The purpose of these responses to the 'big six' questions is to provide summaries of some of the research and information that's out there. We don't make any claim to be completely systematic in our approach but we have tried to provide a more nuanced view of some of the issues than is easily available elsewhere. This can give the impression that we're sitting on the fence, avoiding clear statements either for or against particular points of view.

But as the responses to the big six questions show us, most technologies have both positive and negative features: it's easier to keep track of children if they have a mobile phone but they can also run up huge bills; iPads can be really useful for keeping children occupied on long journeys or in waiting rooms but parents are concerned about the apps that entice children into making purchases. Social media can reduce isolation and enable children to find groups who share their interests – but some sites can promote counter-cultural views or bullying.

We need to be careful not to blame everything on digital media. They easily become a focus for more widespread concerns such as feeling that children get older too quickly these days, that there's not enough time for play, or that there's either too much pressure, or not enough, for children to perform academically.

It's important to remember that, in a family context, we can control the technologies – they don't have to control us. In the same way that we have family expectations about homework, behaviour at meals, pocket money or bedtimes we can have family expectations about the use of digital media. Most parents will feel that these expectations are more likely to be fulfilled if they're negotiated rather than imposed and so avoid creating a battleground. Some families will want to install filters that control the sites to which their children can get access but others may prefer to discuss the risks and challenges.

As we note in the response to Q1, not all parents lose sleep over their child's patterns of media use and some may feel that perhaps they should be worrying more than they actually do. But the wide range of internet-connected devices and the fact that they're getting smaller mean that it's more difficult to keep an eye on what children are doing. Price reductions mean that children are increasingly likely to have sole use of their own tablet rather than share their parents'. When the only means of going online was using the family PC in the living room it was much easier to see what was going on than trying to keep tabs on use of smartphones and tablets at and away from home.

THE 'BIG SIX'

We haven't provided specific recommendations or guidelines here because hard and fast rules aren't very helpful – everybody's child and family is different. It's useful to know what some of the issues

are and where to go for more information but ultimately parents need to exercise their own judgement. Still, it's difficult to write parent-friendly summaries of research that don't over-simplify the findings. That's something that news stories can be guilty of but it's also a risk that we run here. We have tried to present a reasonably balanced view that will help parents make up their own minds based on some different perspectives. We would rather think about responses to the 'big six' as representing a spectrum of opinion than as an argument with two sides but some readers will probably feel that we've come down too heavily on one side or the other.

It would be helpful to have more accounts of children and young people's perspectives. There are examples, such as the EU Kids Go Online project, but this is relatively unusual – typically it's adult research shaped by adult concerns rather than trying to understand why children and young people want to explore and take risks, but without coming across material that upsets or scares them.

READING RESEARCH

Press reports sometimes refer to 'research' as if all research is similar and equally trustworthy. There are several main types of research in the area of children and media: surveys, experiments, real life studies and systematic reviews.

Surveys

Although they don't tell the whole story, surveys can provide a useful baseline for noting trends and informing debate, especially when they are supplemented with more detailed case studies. Surveys provide useful data on the prevalence of different forms of digital media but they need to be interpreted with care. Although most surveys involve a lot of respondents, that isn't always the case and it doesn't necessarily mean that the claims are true. How did the researchers get the responses? Sometimes they use telephone interviews, sometimes they use members of the public who have been recruited – and paid - for this purpose.

Experiments and randomized controlled trials

Studies that are designed as randomized controlled trials are sometimes considered the gold standard for research. However, they don't take fully into account the day-to-day realities of family life because they try to control for different influences. The process of looking at some of the different studies for the 'big six' suggests that they tend to be used to emphasize the dangers rather than the benefits of digital media.

How would you conduct a study into the effects of watching television? Even if you could find enough families *without* a TV for comparative purposes, you couldn't control for all the other variables, ie all the things that make one study situation and one family different from another. For instance, how much is playback used and how much TV is watched in real time? What counts as 'watching' television? Does that include programmes on laptops and tablets? What about doing some online shopping or sending text messages while 'watching' television? Does that include watching TV on the train? Not having a television is fairly unusual so how typical are the families without a television these days?

Even if we could control variables like these and get a number of roughly similar families, how would you look at the effects over time? The children involved might also be watching TV at friends' houses or with their grandparents. Looking at the effects of digital media isn't the same as trials for new drugs where participants are matched as far as possible. Some get the drug and some don't. The

ones who don't get the new drug get a placebo – they don't know if they've got the drug or not. And in 'double blind' trials, the researchers don't know which ones have got the drugs either – all the families are pre-coded – but it's not possible to organize a trial on the effects of television or computers in this way.

Real life studies

Studies that look at real families in natural situations without interfering in what they would usually do are sometimes known as real life studies. They might give us a more realistic view of family life but all situations get changed by the presence of a researcher. Studies like this tend to be much smaller in scale – it wouldn't be possible to include thousands of families because it would take up too much time and need too many researchers – so there are questions about how much you can generalize from a fairly small number of participants.

Systematic reviews

Systematic reviews are also used in the medical field. Where there are lots of studies on a particular disease or drug it can be helpful to go through all of them systematically to see if patterns emerge. The authors don't do new research but gather together studies which fulfil certain criteria. However, these are difficult to achieve in the area of children's uses of digital media because the definitions used vary, or the age of the children, or the types of media they're accessing.

Whatever form of research is being reported, we need to look beyond the headlines as well as being careful about making a link between one context and another. For instance, one study describes how bombarding newborn mice with noise and flashing lights for six hours a day leads to hyperactivity, poor memory and learning problems [1]. The authors link this to babies, saying that exposing them to television could lead to over-stimulation and lack of attention. It is only right at the end of the report that the authors say that they don't really know the extent to which the results on mice can be transferred to humans.

The focus here is on the situation in the UK but we have drawn on research from other countries, particularly the USA. We have tried to get a balance between making reference to studies that are available to the public so that it's possible to follow them up if desired and studies that may be more academic in style. Reports and articles in the first category usually have the benefit of being a bit more readable and easy to understand. However, studies that are reported in academic journals are usually subject to 'peer review'. This means that their design and the conclusions that the authors come to are subject to scrutiny from other academics working in the same field and so they may be more reliable, although this is not guaranteed. Unfortunately, many of these studies are published in expensive journals that are not easily available to the public, although some are now being published in what's known as 'open access' journals.

The research we've looked at is listed at the end of each section. Titles that have been asterisked are available to the public and can be downloaded. When reading any accounts of research it's Important to check who's sponsored the research and what's the motive for conducting it as this can influence the results and how they're reported.

In this case, the review has been sponsored by the Children's Media Foundation. Its mission statement is 'ensuring quality, range and choice in UK kids' media' and on the home page of the website Philip Pullman, the well-known children's author, is quoted as saying "Children, and the media they use, are frequent topics of public concern and debate. The Children's Media Foundation will stimulate and participate in this debate – across the entire range of media that children experience." This shapes what we've written here, but so does many years of conducting research

with children and their families. How can you guarantee that we've looked at a wide range of evidence? We can't guarantee that we've looked at everything. As the media landscape changes so rapidly we have focused on research published in the last five years or so and a mix of academic and less academic reports.

The foreword to Tanya Byron's report from 2010 looking at children in the digital world [2] provides a reasonable summary of where we're coming from:

"New technologies are integral to the lives of all children, young people and their parents. They inspire children to be creative, communicate and learn. It is essential that children and young people tap into the potential of the digital world if they are to enjoy their childhood and succeed in life. In educating children and young people we should empower them to learn how to use digital technology responsibly, not simply block what they can access. We must give them the information and skills they need to be digitally literate and savvy users. This enables them to take advantage of the opportunities that new technologies can offer, as well as being able to deal with any risks that arise."

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1 Christakis, D. Ramirez, JSB. & Ramirez, JM (2012) Overstimulation of newborn mice leads to behavioral differences and deficits in cognitive performance. Scientific Reports 2, 546. *

2 Byron, T. (2010) Do we have safer children in a digital world? A review of progress since the 2008 Byron Review. Nottingham: DCSF publications.*

Q1: Are screen-based media 'bad' for my children?

- Be wary of research that makes general claims about screen-based media being 'bad' for children: it's the specific *content* of media and the specific *context* of use that count.
- It has not been proven that media discourage children from exercising. Research shows that a wide range of factors may cause child obesity.
- Evidence suggests that using technology after lights out may lead to tiredness and poor sleeping patterns in young people.
- It seems likely that there are both positive and negative effects.
- The amount of time parents spend in front of a screen can shape children's media habits.

There's a huge amount of debate surrounding the potential benefits and risks associated with children's media use and it's difficult to know what's for the best. Turning to what the research says can help – but just because it's described as research doesn't mean that it's neutral. It's wise to be cautious, whether a report strongly emphasises the negative or the positive effects of media on children. Studies that don't show any effect tend not to get published - and certainly don't become the subject of media interest. What's the story if a study suggests that time spent watching the television or playing computer games doesn't seem to damage your child?

The American Academy of Pediatrics (AAP) has had a lot of publicity for discouraging children under the age of two from having any screen exposure and suggesting that older children's screen time should be limited to under two hours a day. They also say that televisions and internet-connected devices should be kept out of a child's bedroom, usage should be monitored and a 'family home use plan' should be established that includes a ban on screen-based media at meals and bedtimes.[3] They claim that exposure can lead to a wide variety of health risks, but perhaps it's not surprising that a group representing a medical profession focuses on the threats rather than the benefits - and overlooks some of the day-to-day realities of family life. However, their recommendations have been influential, even on this side of the Atlantic, because some parents look for firm guidance in this unknown territory.

Nobody really knows what counts as an excessive amount of screen time. Headlines can be misleading here, too. For instance, a 2013 survey of nearly 1500 parents of children between the ages of nought and eight that took place in the United States showed that the amount of time children spent using mobile devices had tripled over the two years since the previous survey. However, it still accounted for just 15 minutes per day.[4] Figures for the UK collected by Ofcom show that the amount of time spent online varied from just over an hour a day for children aged five to seven to just over three hours a day for children aged 12 to 15. But these are for weekend days and figures are considerably less on school days.[5] Context and content are important: some parents might be quite happy for their 12-year-old child to spend two hours at a time playing Minecraft but rather less comfortable about the same child playing ten minutes of Grand Theft Auto. That said, children who spend extended periods of time interacting with or watching media are unlikely to be totally immune from some effects. It cuts both ways: if it's possible that violent video games are detrimental then it is possible that games designed to be educational or to support positive behaviour can affect children in ways that are beneficial.

It has yet to be proven beyond doubt that screen-based activities discourage children from exercising[6] but a survey of 2,300 parents of children aged nought to eight showed that parents believed that screen media have a negative impact on children's physical activity.[7] However, an in-depth Scottish study of nearly 3000 children says that other factors are more likely to be associated with a child being overweight or obese than time spent in front of a screen. Factors such as having an overweight parent, frequently snacking on unhealthy foods as a toddler and skipping breakfast don't get the same amount of press coverage, but all have strong links to child obesity.[8]

There seems to be more evidence for links between the use of technology and lack of sleep and poor sleep patterns. The brightness of the screen can mean that having a TV or computer in the bedroom interferes with sleep as it alters the ways that help your body to know it's tired[9] and taking a mobile device to bed can mean settling down to sleep much later than usual. Research investigating 13-16 year olds in Belgium found that using mobile phones after lights out was widespread and increased levels of tiredness, although they pointed out that adolescents might use their mobiles because they couldn't sleep, rather than the other way around.[10]

The main areas of concern for parents are threats to children's health and wellbeing, concerns about video games (see Q2), social behaviour (Q3) and educational issues (Q5). However, even the extent of parents' worries is debatable as it can vary depending on the age of the children and parents' levels of confidence. A small-scale study of young children suggested that parents were not worried about negative effects of screen-based media as they believed that they had the right balance of activities for their family,[11] a conclusion in line with over 75% of parents of three- and four-year-olds in Ofcom's 2012 survey[12] that said they were not concerned about their children's use of TV or computer games. Even for children in the five to fifteen age range, nearly three-quarters said that they were 'not very or not all concerned' about how much time they spend online.[13] While some parents clearly do have concerns, media coverage can exaggerate this a bit and it's possible that researchers or medical professionals may be more concerned than parents about the potential influence of screen media.[14]

Still, some parents do have concerns about the role of screen-based media in family life and if you're worried, you're not alone. It's a natural response to change and the unknown. The widespread introduction of new forms of entertainment often gives rise to parents' anxieties: in the 1950s, for instance, rock 'n' roll music was considered to be a bad influence on children because it was seen as too sexualized. It can seem more complicated now because rapid changes in technology can get tangled up with a belief that children find their way around digital devices better than their parents, turning upside down the conventional roles of the adult who knows more than a child. In practice, this is rarely the case with young children[15] but parents of teenagers sometimes lack confidence about overseeing their child's media usage. One of the difficulties is deciding how much control over our children's activities we want to have as parents and whether forbidding games or viewing creates a counter-productive forbidden fruit effect.

We also need to remember that one of the biggest influences on children's wellbeing is our own behaviour. If we feel that our children are spending too much time online then cutting down on our own screen time while they're around and creating opportunities for sharing active play might help.[16] We all know that it's not easy to put this into action but, at the least, we could acknowledge that we are more likely to foster the media habits we would like to see in our children if we pay more attention to our own.

[3] Strasburger, V. and Hogan, M. (2013) Policy Statement: Children, adolescents and the media. Pediatrics 132(5): 958-961; Strasburger, V. (2010). Policy Statement – Media Education. Pediatrics 126 (5): 1012-1017.

[4] Rideout V. (2013) Zero to Eight: Children's Media Use in America 2013. San Francisco: Common Sense Media.*

[5] Ofcom (2013) Children and parents: Media literacy tracker. Released August 2013.

[6] Howard-Jones, P. (2011) The impact of digital technologies on human wellbeing: Evidence from the sciences of mind and brain. Oxford: Nominet Trust. *

[7] Wartella, Rideout, Lauricella and Connell (2013) Parenting in the age of digital technology. Evanston IL: Center on Media and Human Development, Northwestern University.*

[8] Parkes, A., Sweeting, H. & Wight, D. (2012) Growing Up In Scotland: Overweight, obesity and activity. Edinburgh: Scottish Government.*

[9] Wood, B., Rea, M., Plitnick, B. and Figueiro MG (2013) Light level and duration of exposure determine the impact of self-luminous tablets on melatonin suppression. Applied Ergonomics, 44 (2) 237-240.

[10] Van den Bulck, J. (2007) Adolescent use of mobile phones for calling and for sending text messages after lights out: results from a prospective cohort study with a one-year follow-up. SLEEP 30 (9) 1220-1223.

[11] Plowman L., McPake J. & Stephen C. (2010) The technologisation of childhood? Young children and technologies at home. Children and Society 24 (1) 63-74.

[12] Ofcom (2012) Children and parents: Media use and attitudes report. Released 23 October 2012.

[13] Ofcom (2013) Children and parents: Media literacy tracker. Released August 2013.

[14] Funk, J., Brouwer, J., Curtiss, K. & McBroom, E. (2009) Parents of preschoolers: expert media recommendations and ratings knowledge, media-effects beliefs, and monitoring practices. Pediatrics, 123 (3) 981-988.

[15] Plowman, L. & McPake J. (2013) Seven myths about young children and technology. Childhood Education 89 (1) 27-33.

[16] De Decker, E. et al. (2012) Influencing factors of screen time in preschool children: an exploration of parents' perceptions through focus groups in six European countries. Obesity Reviews 13 (1): 75-84.

Q2: Will playing violent video games make my child more aggressive?

- Much of the research on the links between video games and aggression has been questioned and it has yet to be proven that playing violent video games causes young people to commit an act of violence in the real world.
- While some studies suggest there's a link between playing video games and higher levels of anger, aggression and guilt others suggest that playing video games with strong social messages can have a positive impact on young people.
- A child can be aggressive for many reasons and playing violent video games should not be considered as the only potential cause.

Many studies claim that playing violent video games causes violent and aggressive behaviour in young people. When reading reports on this topic it's important to keep in mind that just because two things occur together it doesn't necessarily mean that one caused the other. Let's say that you live in an area with high levels of crime. You've also noticed high levels of police presence. We could say that there's a high *correlation* between police presence and crime but common sense tells you that the police don't *cause* the crime, they're more likely to be there as a response to it.[17] That seems fairly straightforward, but confusing correlation and causality can happen easily in very complex situations.

In terms of the debate over violent video games, it has yet to be proven that the games *cause* young people to be violent. Perhaps they play violent video games *as a result* of high levels of aggression, rather than becoming aggressive because they are playing the games. It would be necessary to test this out over a fairly long period of time but there are so many other things going on in the lives of young people that it gets very difficult to disentangle all the factors that may either contribute to or protect from possible harmful effects. In the real world, rather than in lab experiments, most events have many causes.

Statisticians have procedures that can be used to check results but, for the rest of us, arguments about causal relationships are difficult to follow. Sometimes the headlines are the result of misinterpretation or the results getting over-simplified. One review claimed that the link between media violence and real-life aggression is almost as strong as the impact of smoking on lung cancer[18] but It may also be the case that there is a 'publication bias': this means that publishers of academic journals favour articles that claim negative effects over those showing no effect as they are more newsworthy.[19]

A US study published in 2010 looked at over 136 of these studies, covering over 130,000 participants, in an attempt to summarise the current research and come to some conclusions. It found that the clear majority of scientific research indicated that exposure to violent video games was significantly related to higher levels of aggressive behaviour and feelings of anger, as well as possibly desensitizing players to violence. It was also suggested that children may be more susceptible than young adults to the effects of these games.[20]

Content and context are important here. There have been questions raised over the research techniques used, the method of measuring 'aggression', and even the definition of 'violence' in these studies.[21] What do we mean when we talk about a violent video game? In the UK, PEGI (Pan European Game Information) has responsibility for rating video and computer games and providing an indication of content in eight categories (eg sex, violence,

bad language or discrimination). The minimum recommended age for playing games is categorised as 3, 7, 12, 16 and 18. Their statistics for 2012 show that a third of all games were rated in the 3 category and more than three-quarters are rated 12 and under, with less than 10% rated as 18. However, while the icon for violence is not used at all for games rated as 3, nearly a third of games rated as 7 are considered to have some violent content, although this is described as 'cartoonish'.[22] Games that indicate violence but rated as 12 could include realistic looking violence towards fantasy characters (eg dragons) or non-realistic looking violence (eg characters disappear in a puff of smoke) to realistic human or animal characters. Levels of violence are considerably higher in games rated as 16 and 18 and can include realistic looking injury.

Whether played online, on consoles, or on handheld devices, video games with violent content have been connected with producing a number of emotions and reactions from the young people playing them. Despite the common argument that video games are detached from the real world, one study has shown that players may have feelings of guilt related to virtual violence, particularly if the violence is not justified within the game. The study suggests that violent video games may provoke 'moral responses' and create feelings of wrongdoing in those that play them.[23]

Other studies indicate that playing video games described as pro-social, in other words emphasising co-operation and actions benefiting others, can increase empathy and sensitivity in players. An article providing results from three studies in Singapore, Japan and America found that young people responded to playing pro-social games by behaving in a more helpful manner towards others.[24]

Some games require aggressive gameplay but with a positive aim, such as saving an heroic character. Some of these complexities are highlighted in a study[25] that suggests that players whose aim was to protect their friend showed less aggressive behaviour compared to those who did not have this pro-social or helpful intention. There are limitations to this study as there are for many in this field but the authors conclude by suggesting that designers could focus on providing the entertainment and excitement that gamers want, but within a positive context.

Studies showing the potential positive effects of games can be open to the same criticisms as those suggesting negative effects. Apart from the problems of deciding the real causes of changes in behaviour, there are other issues connected with the design of these studies, such as how the participants are selected, the duration of the study and asking loaded questions. Overall, it has not been proven that playing violent video games will cause a child or young person to commit an act of violence in the real world but it's possible that the content of a game can affect children's tendency to behave in a particular manner, whether that's anti-social or pro-social, depending upon the amount of exposure to the game in question. Aggression in children is likely to be caused by a wide variety of factors, and while playing violent video games may be one of them, it should not be considered in isolation.[26]

So the jury's still out on this. Parents who are concerned about the potential effects of violence can choose to make active use of the guidance provided by PEGI. As Tanya Byron commented in the review she carried out for the government in 2008: "Some make links between what happens online or in a game, and what happens on the streets or at home. These headlines have contributed to the climate of anxiety that surrounds new technology and created a fiercely polarised debate in which panic and fear often drown out evidence."[27] There are lots of studies that suggest there may be some kind of a link but it's difficult to

compare them – they're all looking at different things and defining violence or aggression in different ways.

[17] This example and others are in 'Bad science hurts us all: a call to end 'man bites dog'-style publication'. Laura & John Arnold Foundation blog dated 15th November 2013 at www.arnoldfoundation.org/news/bad-science-hurts-us-all-call-end-%E2%80%9Cman-bites-dog%E2%80%9D-style-publication

[18] Strasburger, V., Jordan, A. and Donnerstein, E. (2010). Health effects of media on children and adolescents. Pediatrics 125 (4) 756-767.

[19] Ferguson, C. & Kilburn, J. (2010). Much Ado About Nothing: The misestimation and overinterpretation of violent video game effects in eastern and western nations: Comment on Anderson et al. Psychological Bulletin 136(2): 174-178.

[20] Anderson, C. et al. (2010). Violent video game effects on aggression, empathy and prosocial behavior in eastern and western countries: A meta-analytic review. Psychological Bulletin 136(2): 151-173.

[21] Buckingham, D. (2007). The Impact of the media on children and young people with a particular focus on computer games and the internet, pp.27-34. Prepared for the Byron Review on Safer children in a digital world.*

[22] PEGI (Pan European Game Information) (2012). Annual report.*

[23] Hartmann, T., Toz, E. & Brandon, M. (2010). Just a game? Unjustified virtual violence produces guilt in empathetic players. Media Psychology. 13(4): 339-363.

[24] Gentile, D. et al. (2009). The effects of prosocial video games on prosocial behaviors: International evidence from correlational, longitudinal and experimental studies. Personality and Social Psychological Bulletin. 35(6): 752-763.

[25] Gitter, S., Ewell, P., Guadagno, R et al. (2013). Virtually justifiable homicide: The effects of prosocial contexts on the link between violent video games, aggression, and prosocial and hostile cognition. Aggressive Behavior 39 (5) 346-354.

[26] Howard-Jones, P. (2011). The impact of digital technologies on human wellbeing: Evidence from the sciences of mind and brain. Oxford: Nominet Trust. *

[27] Byron, T. (2008). Safer children in a digital world: the report of the Byron review. Nottingham, DCSF.*

Q3: Will spending too much time in front of a screen affect my child's social skills?

- Screen time seems to be increasing for children and young people of all ages but It's difficult to make accurate estimates.
- Some studies suggest screen time displaces other activities or has a negative impact on health and wellbeing.
- Children use virtual worlds to engage in play similar to their offline activities, while teenagers use social media to maintain relationships and a sense of belonging.
- Screen time can be part of a balanced range of activities for children and young people alongside other pursuits.

'Screen time' describes the length of time in a day that children spend in front of a screen. Surveys that show what are considered to be high levels of screen time for children often raise concerns about the role of digital media in their lives and which activities are getting squeezed out as a result. It's difficult to make accurate calculations on this as the figures usually rely on asking parents to estimate how long their child watches television or goes online. The specific situation makes a big difference: young children often play with traditional toys while the television is on in the background. Whether this counts as screen time and whether it makes any difference in this context is unclear, although a study[28] suggests that exposure to background television may have a negative impact on children's thinking skills and social play.

For now, television continues to be the main form of children's exposure to screens in the home but there has been an increase in the use of screen-based devices such as tablets and smartphones so there are certainly more screens around in the average home than there were just a few years ago. It's not unusual to see adults and young people using a mobile phone, tablet or netbook and television all at the same time, making it even more difficult to calculate screen time. In America, recent findings show a big jump in what's available to very young children: for example, the number of children under eight who have used mobile devices like smartphones for some kind of media activity has almost doubled since 2011 to nearly three quarters (72%).[29]

Adolescents typically spend more time using screen-based media than younger children. A survey by Ofcom shows that the amount of time spent online almost triples to just over three hours on weekend days between the ages of five to seven and 12 to 15. However, this difference is not as marked when it comes to watching the television, with children aged between five and seven watching an average of nearly three hours on a weekend day and children aged 12 to 15 watching about the same amount at just over three hours. While some research claims that playing video games can displace activities such as reading, it has not found conclusively that it limits the amount of time spent interacting with parents or friends.[30]

Controversially, the American Academy of Pediatrics (AAP) recommends that parents limit their child's entertainment media consumption to no more than 1-2 hours per day, while children under two should have as little exposure to screen media as possible. The AAP also advises that TVs and internet-connected devices should be kept out of a child's bedroom, and that parents should spend time watching media with their children.[31]

A report from Public Health England[32] had a lot of publicity in 2013 for saying that time spent playing computer games had a negative impact on children's wellbeing. The report also made claims about the link between how much television children watch and how unhappy they are. It claims that every additional hour of viewing increases the chances of children experiencing emotional problems and low self-esteem. It seems unlikely to be that straightforward: as we point out above, it's difficult to calculate screen time accurately and the report seems to exclude time spent using the computer for homework as that's considered to be OK. The report is not based on original research but summarises other studies. Tucked away on the last page it says that there is no proof of a causal link.

Alternatively, there is evidence that children who engage with various kinds of media are developing skills that can connect them to the modern world. The ability to use these technologies responsibly, often referred to in research as 'digital citizenship', has been shown to help children in their relationships as well as promoting creativity and self-expression. The ways in which children actually use digital media, such as accessing emails, playing in virtual worlds and video conferencing with family members and friends, can support both social interaction and play.[33]

One UK-based study of children aged five to seven found that online virtual worlds provide children with opportunities for play that are not so different from their real-world play activities, claiming that sites such as Club Penguin offer children the chance to use role-play and make-believe, as well as develop other elements of social play.[34] There can be down sides to sites like these, though: some people feel that they develop consumerism too early as they encourage children to have paid membership and to collect virtual items that cost real money. And in the same way that children can feel excluded from real-world play, cyberbullying can make children feel left out from online games. But, overall, properly moderated virtual worlds can encourage social interaction and teach children how to engage in digital arenas, potentially preparing them to navigate online environments more safely in the future, especially if parents keep an eye on what's going on. This can be particularly helpful for children who are geographically isolated from others or those who have an illness that means that they can't get out and about. Although there have been concerns expressed about social networking sites having a negative impact on young people's social skills they can also support adolescents to develop feelings of social connectedness and wellbeing.[35]

It seems likely that spending many hours a day in front of a screen is not good for us in terms of physical activity, although there's a great deal more concern about children's screen time than there is for adults who spend their whole working week in front of a screen. Children may go through phases of spending excessive amounts of time on various activities, whether it's riding their bike or drawing. Some people used to say that too much time spent reading could lead to social isolation. Ultimately, most of us would prefer that children enjoyed a balanced range of activities rather than spending all of their time on one thing to the exclusion of others. Finding enjoyable activities to share is one solution to this. It may even help if you show an interest in your child's online play – if you're willing to chat about their activities they might be more responsive when you ask them to do something else for a while.

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Q4: What are the possible risks associated with my child going online?

- Parents need to be aware of the potential risks associated with online activity such as cyberbullying and accessing dangerous or inappropriate content.
- Younger children have fewer skills than older children in dealing with dangers on the internet and are exposed to different types of risk.
- There are steps that parents can take to minimise risk, such as engaging children in talking about their online activity.

Young people use online communication to support their existing friendships. This can enhance their self-esteem and sense of social belonging but they can also encounter harassment and bullying. A recent report by ChildLine revealed that young people talked about cyberbullying in over 4,500 counselling sessions during 2012-13, almost twice as many as in the previous year. Cyberbullying can include sending threatening texts or circulating inappropriate and upsetting pictures and messages on social networking sites.[36] Keeping the computer in a family room where the child's online activity will be visible can help to identify and intervene in instances of cyberbullying but we know that older children are likely to resist this and feel the need for private space away from adults. Parents aren't able to know everything their teenagers get up to online in the same way that they don't know what they're doing when away from home. This makes it important that young people are encouraged to disclose instances of anything that makes them uncomfortable so that appropriate action can be taken and the relevant authorities and service providers can be notified if needed.[37]

We need to keep a sense of proportion here, though. Tanya Byron, for instance, says: "There is a perception that most children and young people are going to encounter harm online. This is not true."[38] In 2013 Ofcom asked parents whether they thought their child had seen anything online that was worrying, nasty or offensive In the last year. Of those with children under the age of five, 4% said yes and for parents of five to fifteens it was 13%. We should be concerned about this level of incidence but it is not as high as media coverage might lead us to believe.

Of course, parents won't necessarily know if their children have been affected in this way so knowing more about children's perceptions of inappropriate online material is a good place to start. EU Kids Online published a report in 2013 based on 10,000 children from across Europe who were aged between nine and sixteen explaining in their own words what kinds of things upset them. They revealed a wide range of different risks and concerns when online, with pornography and violence topping the list. Video sharing sites such as YouTube were most frequently associated with harmful or upsetting content by the children. The report also found that children between nine and twelve were primarily concerned about content, but as they got older they were more concerned with issues like cyberbullying, sexting (text messages with sexual content) and inappropriate online contact from adults.[39] Children as young as two or three are now watching videos on tablets and smartphones and there have been concerns raised regarding young children using video sharing sites such as YouTube, as they can be just a few clicks away from accessing age-inappropriate material.[40]

Ofcom[41] has also asked children aged eight to fifteen who go online at home which things they 'don't like' about the internet. The largest proportion, at over a third, was websites that take too long to load, followed by too many advertisements. Next was 'people being nasty, mean or unkind to each other' at 17% and, lower down the list, 'seeing things that make me feel sad, frightened or embarrassed' at 8%.

Unpleasant or dangerous content exists. One report looked at 126 pro-anorexia and eating disorder websites and found that there was a lot of material available online that could encourage harmful behaviours.[42] Another study found that social networking sites and discussion forums can be sources of information about suicide, some of which can be dangerous for adolescents who have suicidal thoughts.[43]

Social networking sites such as Facebook have been associated with grooming and sexual exploitation of young people, although a study from the United States found that chatrooms, instant messages and video communication were more often used to initiate and maintain contact between young victims and their abusers. The authors suggest that young people should be educated about inappropriate online behaviour such as posting sexual images of themselves or talking about sex with someone they have met online.[44] This is especially important when young people are increasingly turning to the internet for information and discussion about sex.

Children younger than nine have fewer skills than older children in dealing with dangers on the internet. A small-scale Australian study asked children aged between five and eight if they would meet up with someone they only knew as a result of going online. More than a third gave reasons why they thought it would be okay. Although the majority of the children were able to identify a number of dangers associated with the internet, there were also some whose lack of knowledge suggested that their safety could be at risk. However, we need to keep in mind that it would be rare for children of this age to be out and about unaccompanied, so the real-world risk may actually be smaller.[45]

With such a variety of potential risks it is understandable that parents find the task of keeping their children safe online a daunting one. How can parents reduce the online risks without removing the opportunities that the internet offers? Another report from EU Kids Online, which surveyed over 25,000 nine- to sixteen-year-olds in 25 countries, recommends that parents should have conversations with their children about using the internet and stay nearby while their child is online as this was shown to minimise risk and harm without reducing some of the valuable aspects. This proved more effective than restricting children's access or using filters.[46] Research like this suggests that with greater awareness of online dangers and the skills to avoid inappropriate material, young people can maximize the potential of the internet to provide a positive influence in their lives.

Returning to Tanya Byron's review of these issues in 2010, she says: "Child safety (online or offline) is a hotly debated issue. A focus on the most terrible but least frequent risks can skew debate in a direction that sends out negative and fear-based messages to children, young people and families." She believes that embedding the issue of child digital safety within a broader context of education about the risks that are associated with these sites, developing risk awareness and building resilience within a context of balanced and reasoned debate is more likely to be helpful in the long term.

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Q5: Will spending too much time in front of a screen affect my child's education?

- Internet-use and access to a computer can benefit a child's education, especially if parents are actively involved.
- Television and other screen-based media can be used to develop positive learning experiences for young children by prompting talk and role-play.
- The use of mobile devices or watching television after bed time can lead to increased tiredness with a knock-on effect on performance in the classroom.
- Playing some video games can improve attention as well as the speed of processing information.

Question 3 asked about the impact of screen time on children's social skills; this question takes a look at its possible impact on their education. In this context, it's worth keeping figures from the Ofcom survey of parents in mind: about three quarters of parents are not concerned about how much time their children aged five to fifteen spend on screen-based activities whether it's watching television, going online or playing games, although about a fifth of parents do have some concerns.

Research suggests that television in itself is not harmful and can be a positive experience if it's shared with caregivers and used to prompt talk and role-play.[47] Interactions guided by others can also be beneficial for young children using digital media: finding opportunities to share activities, such as online shopping or where to go on holiday, can provide children with a sense of purpose and opportunities for focused talk as well as developing know-how about how to use devices.[48]

There are indications that some types of media exposure can be good for academic achievement in early childhood. An Australian study that investigated the vocabulary development of over 9,000 children aged from four to eight observed that growth in vocabulary was affected less by watching television and more by the amount of time parents spent sharing their child's media activities. Their study led them to believe that, for preschoolers, the 'protective factors' (in other words, levels of parents' education, shared viewing and a stimulating home environment) are more important than the amount of screen time when it comes to children's language acquisition and that this continues to be the case through to age eight. Based on the results of their study they suggest that the American Academy of Pediatrics may have 'over-interpreted' the findings of the research it used when formulating its guidance about screen time limits for young children.[49] In an American study of over 8,000 young children the use of a computer in the home led to higher achievement in mathematics and reading, although it did not lead to academic gains for low-achieving readers.[50]

For older children and adolescents, there may be different issues. We have already noted that adolescents spend more time online than young children (Q3). Those who spend unusual amounts of time playing video games may disrupt sleeping and eating and this is likely to have an impact on other areas of life.[51] Some research has suggested that watching TV or using mobile phones in the bedroom can displace bedtimes and disrupt sleep patterns, leading to tiredness.[52] This may cause lack of attention in school and disturb the ways in which the brain consolidates learning and memory during sleep.

Some argue that children are spending their time interacting online at the expense of doing their homework and that video games provide an unwanted distraction. A study focusing on the activities of adolescent gamers and non-gamers found that those playing video games spent roughly a third less time reading and doing homework.[53] Nevertheless, it isn't certain that these teenagers would be spending more time and effort on their learning if they were not gaming.

Although prolonged screen time may have a negative effect on a child's ability to concentrate it is also important to take into account the content and the way in which children are using it. A group of researchers from America studied visual attention in gamers and non-gamers across three age groups from seven to seventeen. They found that across all ages playing action video games enhanced the ability to maintain concentration, which made them faster at making accurate responses. This ability to concentrate also allowed them to process information and distractions at a faster pace.[54] Research in Canada also showed that playing video games can improve young people's concentration[55] and other studies have shown that gamers can develop skills to deal with attention-demanding tasks.[56]

There may be some detrimental effects from excessive gaming, but the lack of long-term studies has made this difficult to know for sure. While publicity tends to focus on the negative influences some reports suggest that there can be benefits, particularly if the power of games to be engaging and motivating could be harnessed for educational purposes and designed to support learning.[57]

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Q6: Should I be concerned at the range of content available to my children on TV?

- Despite the increasing number of channels offering content for children, some for 24 hours a day, there is no related increase in the number of new programmes on offer – especially programmes made in the UK.
- There has been a steady decline in output for new and original UK-based children's programming, with a reliance on imports and re-runs and a subsequent lack of quality and diversity.
- There are gaps in what's available, particularly for older children and teenagers.
- New devices are changing the ways that young people view and experience TV programmes, so providers need to adapt to stay relevant and develop their services.
- The economic downturn has led to a lack of investment and this has had an impact on the range of original, diverse and high quality programmes that are made available to children in the UK.

A review by Ofcom in 2013 found that most children aged five to fifteen say that watching television is their main regular media activity, with nine out of ten saying they watch it every day.[58] As watching television is such an important part of children's lives, parents expect children's TV programming to meet certain standards and maintain a good balance between education and entertainment.

What do we mean by quality when it comes to TV? Ofcom states that a public service broadcaster (PSB) should inform understanding about the world, stimulate knowledge and understanding, represent diversity and alternative viewpoints, and reflect the cultural identity of the UK.[59] Is children's TV programming in the UK currently meeting these standards?

There are concerns about the lack of children's new and original programming being produced in the UK. Between 2006 and 2011 the number of hours of original UK children's programming halved and seems set to decline further.[60] This is important because parents show a preference for programmes that are clearly British in nature rather than imported shows from the United States. The BBC has declared that it will focus on 'greater resources for fewer programmes', putting quality over quantity and reducing the amount of cheap entertainment content, such as imported animations.[61] While this may lead to greater quality in the BBC's output, there are concerns that it could lead to a lack of diversity in children's broadcasting in general.[62]

The BBC Trust reports that feedback from parents and children regarding their services is very positive, with CBeebies (for ages zero to six) in particular receiving praise for its high-quality content which has been found to stimulate learning and development. CBBC (for ages seven to eleven) also performs well, providing drama and factual content that is both entertaining and educational.[63]

However, the fact that older children are less likely to watch programmes that are labelled for children is a challenge for broadcasters. A similar effect can also be seen amongst younger children, with the six-year-olds reluctant to make up the CBeebies' audience and keen to progress to CBBC. Similarly, there is little available for older children after they move on from CBBC and even less for ages twelve to sixteen, although this is beyond the target

audience for BBC Children's. Channel 4 is supposed to cater for ages ten and over. In the past, shows like *Grange Hill* and *Byker Grove* were able to engage with teenage and adolescent audiences by exploring issues that were relevant to this age group, but there is now a dearth of material on TV that primarily aims to attract, educate and entertain older children.[64]

Children and young people's viewing behaviours have changed with the technology. An increasing number now use smartphones and tablets to access TV programmes at a time that suits them. In the first four months of 2013, for example, there was an average of 10.8 million requests for BBC Children's on-demand content on BBC iPlayer each week, up by more than a half from the 6.6 million weekly requests for the same period in 2012.[65] The challenge is for providers to match the availability of their services to the new ways that children choose to watch programmes. Only a minority of the CBBC and CBeebies content works effectively on tablets and smartphones at the moment, although action is being taken to make these services more mobile-compatible. This includes launching apps for both CBeebies (available as of August 2013) and CBBC (available in 2014).[66]

Some commentators view the economic downturn as deepening a crisis in children's television that had been developing for a number of years.[67] As children's programming only generates a small amount of advertising revenue it was one of the first services to come under threat from spending cuts, especially on ITV and Channel 5. Ofcom's public service broadcasting report reveals that the total spend by PSBs on children's programming decreased by about a fifth between 2006 and 2011, with spend on first-run originated programmes dropping by a similar amount.[68]

Budgetary restrictions mean that there are now only around two hours of original programming a day dedicated to children. If we look again at Ofcom's requirement of public service broadcasting and parents' desires for a diverse range of content to entertain, stimulate knowledge and educate young people it is unlikely that it can be fulfilled within this time.

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